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09/700,448	02/20/2001	Allen Le Roy Limberg	SAMS:091	3754

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EXAMINER	
NATNAEL, PAULOS M	

ART UNIT	PAPER NUMBER
2614	

DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/700,448	LIMBERG ET AL.	
	Examiner	Art Unit	
	Paulos M. Natnael	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-6* is/are allowed.

6)☒ Claim(s) *7-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims **7-54** are again rejected under 35 U.S.C. 101 because the claims lack usefulness. The claimed invention is directed to non-statutory subject matter. Claims 7-54 are directed to a signal structure having no practical application and/or physical change.

Considering claim **7,** the claim deals with a data signal structure of an electrical wave signal comprising vestigial sideband modulation of a suppressed carrier in accordance with a baseband signal having a uniform baud rate or symbol rate substantially 684 times the horizontal scan line rate of an NTSC television signal that is apt to accompany said electromagnetic wave signal as a co-channel interfering signal, said baseband signal composed of consecutive data segments each consisting of a prescribed integral number of symbol epochs, said consecutive data segments being divided into contiguous data frames each consisting of a prescribed integral number M of contiguous ones of said data segments, each said data frame characterized by beginning with a data frame header including a plurality N in number of contiguous ones of said data segments and concluding with a plurality (M-N) in number of said data

segments including consecutive multi-level symbols used for transmitting data, said data frame header in each said data frame including a first ghost-cancellation reference signal and a second ghost-cancellation reference signal beginning substantially 1368 symbol epochs later than said first ghost-cancellation reference signal, which said first and second ghost-cancellation reference signal exhibit respective variations that are complementary to each other.

Considering claim **24**, the claim deals with a signal structure of an electromagnetic wave signal comprising vestigial sideband modulation of a suppressed carrier in accordance with a baseband signal having a uniform baud rate or symbol rate, said baseband signal composed of consecutive data segments each consisting of a prescribed integral number of symbol epochs, said consecutive data segments being divided into contiguous data frames each consisting of a prescribed integral number M of contiguous ones of said data segments, each said data frame characterized by beginning with a plurality N in number of said data segments used as a data frame header and concluding with a plurality (M-N) in number of said data segments that include consecutive multi-level symbols used for transmitting data, said data frame header in each said data frame including a respective ghost-cancellation reference signal that is composed of a plurality of PN sequences that are orthogonal to each other.

Considering claims **26**, the claim deals with a signal structure of an electromagnetic wave signal comprising vestigial sideband modulation of a suppressed carrier in accordance with a baseband signal having a uniform symbol rate, said baseband signal composed of consecutive data segments each consisting of a prescribed integral number of symbol epochs, said consecutive data segments being divided into contiguous data frames each consisting of a prescribed integral number M of contiguous ones of said data segments, each said data frame characterized by beginning with a data frame header including a plurality N in number of contiguous ones of said data segments and concluding with a plurality (M-N) in number of said data segments including consecutive multi-level symbols used for transmitting data, said data segments each beginning with a respective data segment synchronization code of a similar prescribed character, said data frame header in each said data frame including a respective ghost-cancellation reference signal that begins in one data segment of said data frame header and finishes in the next-occurring data segment of said data frame header, said respective data segment synchronization code for said next data segment of said data frame header being subsumed in said respective ghost-cancellation reference signal that finishes therein.

Considering claim **31**, the claim deals with a signal structure of a baseband digital signal having a uniform symbol rate substantially 684 times the horizontal scan line rate of an NTSC television signal that is apt to accompany said electromagnetic wave signal as a co-channel interfering signal, said baseband signal composed of consecutive data

segments each consisting of a prescribed integral number of symbol epochs, said consecutive data segments being divided into contiguous data frames each consisting of a prescribed integral number M of contiguous ones of said data segments, each said data frame characterized by beginning with a plurality N in number of said data segments used as a data frame header and concluding with a plurality (M-N) in number of said data segments composed of consecutive multi-level symbols used for transmitting data, said data frame header in each said data frame including a first ghost cancellation reference signal and a second ghost-cancellation reference signal beginning substantially 1368 symbol epochs later than said first ghost-cancellation reference signal, which said first and second ghost-cancellation reference signal exhibit respective variations that are complementary to each other.

Considering claim **48**, the claim deals with a signal structure of a baseband signal having a uniform symbol rate, said baseband signal composed of consecutive data segments each consisting of a prescribed integral number of symbol epochs, said consecutive data segments being divided into contiguous data frames each consisting of a prescribed integral number M of contiguous ones of said data segments, each said data frame characterized by beginning with a data frame header including a plurality N in number o f contiguous ones of said data segments and concluding with a plurality (M-N) in number of said data segments including consecutive multi-level symbols used for transmitting data, said data frame header in each said data frame including a respective

ghost-cancellation reference signal that is composed of a plurality of PN sequences that are orthogonal to, each other.

Considering claim **50**, the claim deals with a signal structure of a baseband signal having a uniform symbol rate, said baseband signal composed of consecutive data segments each consisting of a prescribed integral number of symbol epochs, said consecutive data segments being divided into contiguous data frames each consisting of a prescribed integral number M of contiguous ones of said data segments, each said data frame characterized by beginning with a data frame header including a plurality N in number of contiguous ones of said data segments and concluding with a plurality (M-N) in number of said data segments including consecutive multi-level symbols used for transmitting data, said data segments each beginning with a respective data segment synchronization code of a similar prescribed character, said data frame header in each said data frame including a respective ghost-cancellation reference signal that begins in one data segment of said data frame header and finishes in the next occurring data segment of said data frame header, said respective data segment synchronization code for said next data segment of said data frame header being subsumed in said respective ghost-cancellation reference signal that finishes therein.

Thus, Claims **7-54** state a signal or data structure.

When analyzing a data structure or mathematical calculation claims, the claim will initially be classified as non-statutory if any of the following three conditions are met:

1) the claim recites functional descriptive material (such as data structure per se or computer program per se), 2) the claim can be non-functional Descriptive Material such as music, literary works, mere data per se, or on a computer readable medium, or 3) the claim can be a Natural Phenomenon such as energy or magnetism. If none of the three are applicable then further analysis is necessary to classify the claim as either a statutory or non-statutory product or process.

Claims **7-54** do not claim any natural phenomenon such as a form of energy or magnetism. Nor do they claim non-Functional Descriptive Materials. But, claims 7-54 fall in the category of Functional Descriptive Material as in number one above. That is, the data signal structure as given in the claims are mere compilations of data which may have some intended uses, but lack any interrelation between themselves or the claimed system as a whole.

Therefore, when the claims **7-54** are taken as a whole, they are directed to a data structure, and thus are non-statutory.

Response to Arguments

3. Applicant's arguments filed December 22, 2003 have been fully considered but they are not persuasive.

Applicant's Argument's

With respect to the Examiner's contention that claims 7-54 lack utility, Applicants traverse the rejection because each of the rejected claims is clearly directed to digital television signal as recited unambiguously in the very first sentence of the specification. Because such signals clearly have a specific and substantial utility –the transmission of video image free of distortion or "ghosts" the rejection under 101 on utility grounds is improper....in view of the expansive scope of patentable subject matter under 101 as construed by the Supreme Court and the Federal Circuit, Applicants submit that claims 7-54 as presented constitute patentable subject matter and respectfully request that the 101 rejection be withdrawn.

Examiner's Response

The rejection based on 101 clearly shows that the rejection was made not because the claims are directed to "natural phenomena" or because they claim non-functional descriptive materials. The claims do not recite a device or an apparatus that performs the functions described. Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, are nonstatutory natural phenomena. O'Reilly v. Morse, 56 U.S. (15 How.) 62. 112-14 (1853). However, a signal claim directed to a practical application of electromagnetic energy is statutory regardless of this transitory nature. See O'Reilly, 56 U.S. at 114-19; In re Breslow, 616 F.2d 516, 519-21, 205 USPQ 221, 225-26 (CCPA 1980). Also note MPEP 2106 Part IV B 1(c). As shown in the rejection,

claims **7-54** do not claim any natural phenomenon such as a form of energy or magnetism. Nor do they claim non-Functional Descriptive Materials. But, claims 7-54 fall in the category of Functional Descriptive Material. That is, the data signal structure as given in the claims are mere compilations of data which may have some intended uses, but lack any interrelation between themselves or the claimed system as a whole. Therefore, when the claims **7-54** are taken as a whole, they are directed to a data structure, and thus are non-statutory. Hence, the argument that the claims are directed to digital television signal as recited in the very first sentence in the specification or that the claims are not directed towards a "natural phenomena", is not persuasive.

Allowable Subject Matter

4. Claims **1-6** are allowable over the prior art.

5. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to disclose a data signal receiver for an electromagnetic wave signal including a pilot carrier and vestigial sideband modulation of a suppressed carrier of the same frequency and phase as said pilot carrier, said vestigial sideband modulation being in accordance with a baseband signal having a uniform symbol rate substantially 684 times the horizontal scan line rate of an NTSC television signal that is apt to accompany said electromagnetic wave signal as a co-channel interfering signal, said data signal receiver comprising:

circuitry for selecting said electromagnetic wave signal, converting the frequencies of said electromagnetic wave signal after its selection, and amplifying said electromagnetic wave signal after its selection and conversion in frequency;

circuitry for synchrodyning said electromagnetic wave signal to baseband after its selection, conversion in frequency and amplification and supplying digitized samples of a baseband signal resulting from synchrodyning said electromagnetic wave signal to baseband;

an adaptive equalizer for receiving said samples of a baseband signal resulting from synchrodyning said electromagnetic wave signal to baseband, and supplying an equalizer response to those received samples as weighted by kernel weights that are electrically adjustable;

circuitry for regenerating transmitted data from said equalizer response;

a comb filter for differentially delaying said equalizer response, so said first ghost cancellation reference signal in the more delayed equalizer response occurs simultaneously with said second ghost-cancellation reference signal in the less delayed equalizer response, and subtractively combining said more delayed equalizer response and said less delayed equalizer response to generate a comb filter response;

a computer responsive to selected portions of said comb filter response including the result of subtractively combining said first and second ghost-cancellation reference signals, for performing initial electrical adjustments of the kernel weights of said adaptive equalizer whenever said data signal receiver is initially operated after a time of

inoperation or whenever said electromagnetic wave signal is initially selected, as in claim 1.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (703) 305-0019. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (703) 305-4795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PMN
March 19, 2004

MICHAEL H. LEE
PRIMARY EXAMINER